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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT03-002	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/KR2003/001167	International filing date (day/month/year) 14 JUNE 2003 (14.06.2003)	Priority date (day/month/year) 15 JUNE 2002 (15.06.2002)
International Patent Classification (IPC) or national classification and IPC IPC7 G01N 31/22		
Applicant PARK, Sang-Kyu		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 09 JANUARY 2004 (09.01.2004)	Date of completion of this report 19 OCTOBER 2004 (19.10.2004)
Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer SHIN, Weon Hye Telephone No. 82-42-481-8155 

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International application No.

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I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed

☐ the description: _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the claims: _____, as originally filed
pages _____, as amended (together with any statement) under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the drawings: _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description: _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language English which is

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☒ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheet _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-4	YES
	Claims	none	NO
Inventive step (IS)	Claims	none	YES
	Claims	1-4	NO
Industrial applicability (IA)	Claims	1-4	YES
	Claims	none	NO

2. Citations and explanations (Rule 70.7)

Reference is made to the following document from the International Search Report (ISR).

D1: US 2002/0044891

D2: US 6103865

D3: WO 01/64430

(1) Novelty

(a) Regarding claims 1,3 & 4:

The present invention relates to a freshness indicator (claims 1-4) for foodstuffs using a pH sensitive high molecular weight substance.

Claim 1 comprises a semi-permeable membrane, a packed layer containing the pH sensitive high molecular weight substance and a transparent film.

D1 is considered to represent the most relevant state of the art for the subject matter of present invention with respect to providing a food quality indicator as a part of food packaging material, which reveals changes in chemical conditions of the food as it spoils. The indicator device disclosed in D1 comprises a substrate and an indicator compound disposed on the substrate, which further consists of partially permeable (corresponding to a semi-permeable membrane) and transparent polymeric matrices and an indicator compound disposed thereon. The indicator compound in D1 however is different from the present invention in that it changes colors depending on the presence of volatile bases, whereas the high molecular weight substance of the present invention changes its transparency depending on pH.

- Continued in Supplemental Box

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VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Rule 5.1(a)(ii) requires that the description indicate the background art which, as far as known to the applicant, can be regarded as useful for the understanding, searching and examination of the invention, and preferably, cite the documents reflecting such art. It is considered that this rule has not been satisfied in the following reasons: (a) nevertheless D1 appears to be the most relevant prior art of the present invention, it has not been mentioned in the international application. (b) it would be appropriate to include a comprehensive discussion of the relevant background art in the present application to differentiate the prior art from the present invention.

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of:

Box V

Therefore, claim 1 appears to be novel, and its dependent claims 3-4 are considered novel. Accordingly, claims 1, 3 & 4 fulfill the criteria set forth in Article 33(2) PCT.

(b) Regarding claim 2:

The subject matter of claim 2 is the freshness indicator as set forth in claim 1 further comprising a freshness indicating paper having letters or figures thereon, which is located between the packed layer and the semi-permeable membrane. The additional feature of claim 2 is not found in D1 either and thus making it novel. Claim 2 meets the criteria set forth in Article 33(2) PCT.

(2) Inventive step

(a) Regarding claims 1, 3 & 4:

The aforementioned difference between claim 1 and D1 is the physical or chemical properties of indicator compounds for sensing the condition/freshness of foods. D2 however discloses the pH sensitive polymers that changes physical properties depending on pH and its application in a sensor. Therefore, it seems obvious to a person skilled in the art not requiring exercise of an inventive step to provide the subject matter of claim 1 by replacing the indicator of D1 with the pH sensitive polymers disclosed in D2. Claims 3 & 4 limit the preparation method for the pH sensitive high molecular weight substance of claim 1 to reaction of a sulfonamide group with an acrylamide-based hydrophobic monomer. This is also disclosed in D2 (see abstract). Claims 3 & 4 are thus obvious to the skilled person. Accordingly, claims 1, 3 & 4 do not fulfill the criteria set forth in Article 33(3) PCT for the lack of an inventive step.

(b) Regarding claim 2:

D3 relates to an indicator system useful in tracking the condition of a temperature-sensitive perishable foods, featuring a printing label in the form of a recognizable indicia or message placed between the layers (see figure 6 & page 18). The readability of the label depends on whether compositions of the indicator have acquired proper levels of color density reflecting the condition of foods.

It appears simple for a skilled person in the art to apply the aforementioned feature disclosed in D3 to the subject matter of claim 1, in turn setting forth one in claim 2. It, therefore, is obvious to the skilled person to provide the subject matter of claim 2 by combining teachings from D1, D2 & D3.

Accordingly, claim 2 does not fulfill the criteria set forth in Article 33(3) PCT for the lack of an inventive step.

(3) Industrial applicability

It is objective of the present invention (claims 1-4) to provide a freshness indicator, which is to be attached to a packaging paper for foodstuffs to alert the condition of the foods. This invention seems industrially applicable. Consequently, the claims 1-4 appear to meet the requirements of Article 33(4) PCT.